MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 1745
MSDS Number: 1745
SRM Name: Indium Freezing-Point Standard

Date of Issue: 07 April 2005

MSDS Coordinator: Mario Cellarosi
Telephone: 301-975-6776
FAX: 301-926-4751
E-mail: SRMMSDS@nist.gov

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

Description: Standard Reference Material (SRM) 1745 is intended for use as one of the defining fixed points of the International Temperature Scale of 1990 (ITS-90). This SRM consists of 200 g of indium in the form of 10 g ingots with each ingot sealed in an argon atmosphere in a Mylar® bag.

Substance: **Indium**

Other Designations: **Indium** (indium element; In)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component: **Indium**

CAS Number: 7440-74-6

EC Number (EINECS): 231-180-0

SRM Nominal Concentration (mass %): 100

EC Classification (assigned): Not determined.

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

Major Health Hazards: No significant target effects reported.

Physical Hazards: Negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

Potential Health Effects

Inhalation: No data available for acute and chronic exposure. Dust may be irritating to the respiratory tract.

Skin Contact: No information or significant adverse effects. Metal particles in general may have a direct abrasive action on skin.

Eye Contact: No data available for acute and chronic exposure. In general, metal particles may have a direct abrasive action on eyes.

Ingestion: Indium has a low order of toxicity. Studies indicate that indium is very poorly absorbed by the gastrointestinal tract. May be irritating to the gastrointestinal tract.

Listed as a Carcinogen/ Potential Carcinogen:

Yes	No	
____	X	In the National Toxicology Program (NTP) Report on Carcinogens.
____	X	In the International Agency for Research on Cancer (IARC) Monographs.
____	X	By the Occupational Safety and Health Administration (OSHA).

4. First Aid Measures

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel and get immediate medical attention.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with soap and water for at least 15 minutes.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain immediate medical assistance.

Ingestion: If ingestion occurs, obtain medical assistance.

5. Fire Fighting Measures

Fire and Explosion Hazards: Indium is a negligible fire and explosion hazard in bulk form. Dust/air mixtures may ignite or explode.

Extinguishing Media: Use extinguishing media appropriate for surrounding fire such as water spray, dry powder for metal fires, dry sand, or soda ash.

Fire Fighting: Keep unnecessary people away, isolate hazard area and deny entry**.** Move container(s) from fire area if it can be done without risk. Cool container(s) with water spray until well after the fire is out. Use extinguishing agents appropriate for surrounding fire. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): Not applicable.
Method Used: Not applicable.

Autoignition Temp. (°C): Not applicable.

Flammability Limits in Air
UPPER (Volume %): Not applicable.
LOWER (Volume %): Not applicable.

6. Accidental Release Measures

Occupational Release: Collect spilled material in appropriate container for disposal.

Disposal: Refer to Section 13, "Disposal Considerations".

7. Handling and Storage

Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. Exposure Controls and Personal Protection

Exposure Limits: **Indium**
ACGIH (TLV): 0.1 mg/m^3 TWA
NIOSH: 0.1 mg/m^3 recommended TWA (10 h)
UK OES: 0.3 mg/m^3 STEL
UK OES: 0.1 mg/m^3 TWA

Ventilation: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Respirator: Where indium dust or fumes are generated, exposure is apparent, and engineering controls are not feasible, respirator protection may be needed. Refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84" for selection and use of respirators certified by NIOSH.

Eye Protection: Wear safety goggles. **DO NOT** wear contact lenses in the laboratory. An eye wash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and gloves to prevent prolonged or repeated exposure to skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: **Indium**
Appearance and Odor: Blue, gray solid. Odorless.
Relative Molecular Weight: 114.82 g/mol
Molecular Formula: In
Density: 7.31 g/cm^3
Melting Point: 156.6 °C
Water Solubility: Insoluble.
Solvent Solubility: Soluble in alcohol and acids. Very slightly soluble in sodium hydroxide solution.

10. STABILITY AND REACTIVITY

Stability: X Stable _____ Unstable

Stable under ordinary conditions of use and storage.

Conditions to Avoid: None reported.

Incompatible Materials: Indium is incompatible with metals salts, acids, and oxidizing materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Polymerization: _____ Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation _____ Skin X Ingestion

Toxicity Data
Indium: Mouse, subcutaneous LD_{LO}: 10 mg/kg

Health Effects
(Acute and Chronic): See Section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: Not available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOTand IATA: No classification assigned.

15. REGULATORY INFORMATION

U.S. Regulations: CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Sections 302 (40 CFR 355.30), 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

	SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21): ACUTE: No. CHRONIC: No. FIRE: No. REACTIVE: No. SUDDEN RELEASE: No.
	OSHA Process Safety (29 CFR 1910.119): Not regulated.
	California Proposition 65: Not regulated.
CANADIAN Regulations:	WHMIS Classification: Not determined.
EUROPEAN Regulations:	EC Classification (assigned): Not determined.
National Inventory Status **U.S. Inventory (TSCA):**	Listed on inventory.
TSCA 12 (b) **Export Notification:**	Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Indium,* 19 March 2003.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.